THE

WESTERN JOURNAL

OF THE

MEDICAL & PHYSICAL SCIENCES.

FEBRUARY, 1829.

## ESSAYS AND CASES.

ART. I.—*A summary view of the Ætiology of Bilious Fever.* By JOHN P. HARRISON, M. D. of Louisville, Ky.

The design of the following remarks is to present a condensed statement, composed of materials, drawn from the most authentic sources, of the causes of our summer and autumnal fevers. A dark cloud of mystery hangs over many causes of disease, which is not easily penetrated by the most searching scrutiny. Causation demands much patient assiduity of research, from every one who would enter its secret recesses, where the first elements of natural phenomena are generated. Aware of the misleading attractions of a hasty generalization, by which exceptions are sometimes exalted into rules, and deviations made the standard of regular processes, I will lay down three fundamental propositions, or cardinal points, which the existing state of our professional information seems to warrant us in regarding, as a substantial groundwork upon which to erect the ætiology of bilious fever.

There are two preliminary observations to be made, more completely to open the way for the progress of the discussion. The first is, that when the word *ætiology* is used in the following pages, it is intended to import what its derivation implies. It is derived from the Greek word *aitos*, the cause of any thing;

and *logos*, a discourse. Perhaps it may be regarded as a word borrowed directly from Quintillian's rhetorick,—"ætiology being a figure, by which in relating an event we assign a cause for it."

The second observation is, that in using the generic term *Bilious Fever*, all the varieties of summer and autumnal fever, which are met with in the valley of the Mississippi, from the lightest grades of ague and fever up to the all subduing and mortal power of yellow fever, are comprehended.

With these introductory remarks, the intended analysis of the remote causes of bilious fever is now entered upon.

The atmosphere by which our globe is surrounded, and in which we are immersed, is the great laboratory of nature, as regards many of those operations which have a direct reference to, and intimate connection with, the well being of man. Besides its physical qualities, such as heat and cold, dryness and moisture, alternate condensation and rarefaction, increased weight or diminished pressure, the atmosphere possesses chemical attributes, which once lay profoundly hidden from the eye of philosophy, but have been triumphantly drawn from their state of concealment by the penetrating genius of a Priestly and a Lavoisoir. But, independently of the above mentioned properties, the atmospheric fluid, which is circumfused on every hand, is the depository, or store-house for a vast variety of gaseous substances, as well as the great region in which electricity and caloric reside.

Climate comprehends these physical phenomena. To this source we are to advert for the most operative causes of common maladies. The endless variety of phlegmasial diseases is referrible to the heat and cold, humidity and aridity of the atmosphere. But there are epidemic visitations of disease, which arise irrespective and independent of these physical alterations. These must depend then, on some other change, than that of a sensible kind, in the atmosphere, or they originate from a superadded foreign ingredient infused into the air from the earth.

Hippocrates to cut the matter short, and at one blow to prostrate all opposition to his peculiar views, attributed such

visitations to a certain something, about the meaning of which learned commentators are not agreed, a *to theion;*—the god; for being a Grecian, he imitated his countrymen in peopling the air with imaginary deities. Now this is a mere superstition, and deserves no further notice. Noah Webster, however, informs us, in his elaborate work on Epidemics, that Hippocrates taught the existence of a *katastasis loimodes*, or pestilential constitution, or condition of atmosphere; and Sydenham in his imperishable work does the same. But these two great cultivators of medicine merely state a fact, without tracing the occult nature of the cause. Lancisi attempted to prove, that besides the sensible qualities of the atmosphere, and the epidemic constitution, there did exist an intermediate agent, which though inappreciable by our senses, or discoverable by chemical tests, was yet a most efficient cause of fever. Marsh miasma, though acting independently of the epidemic state, or condition of the atmosphere, Lancisi considered, as in some degree sustaining a relation to the agency of heat, having its origin from a hot sun operating on stagnant water, impregnated with vegetable matter. Consonant to this short exposition, there emerge before our view, three distinct sources of disease, as far as the atmosphere has any agency in its production.

1st. The sensible qualities, or physical changes of the air—this Dr. J. M. Smith, in his work on Epidemics, calls sensible meteoration.

2d. Marsh miasma—denominated variously by the terms paludal effluvia, malaria, vegeto-animal effluvia, and exhalations from the soil.

3d. Epidemic condition of the atmosphere, termed thus by Hippocrates, and Sydenham, and called by Dr. Smith, epidemic, or insensible meteoration.

Among the most efficient agents in developing the pestiferous miasma, to which epidemic bilious fever owes its origin, is high solar heat. That high solar heat however, uncombined with some inquinated state of the air, will produce epidemic bilious fever, is a position at variance with the most

ordinary observation. Locality of position, and other modifying circumstances, come in as qualifying considerations to the universality of this statement. I refer to our climate, and to the location of this city, when I speak with such confidence. And I am borne out by the concurrent testimony of other physicians, as respects the truth of the position, in reference to other places.

There are cases of fever of a sporadic character, occurring every summer, from excessive heat, but such cases are more manageable than epidemic cases, arising from causes of a more intense morbid influence. Some medical gentlemen, abandoning the ground that heat alone can produce epidemic bilious fever, have resorted to the conjoint action of solar heat and humidity, as affording a just foundation upon which to establish the ætiology of the disease. Fordyce assumed this ground, and with considerable adroitness strove to maintain it. But however ingenious may be the exposition of his peculiar views, yet in matter of fact observation, his system is extremely defective.

Let the reader reflect on the following language of the learned author:—"When the air is moist in consequence of water evaporating from a marshy country, or from canals in which the water is stagnating or moving with a very slow motion, fevers more frequently arise, than when the moisture proceeds from the sea, large lakes, or rivers confined within their banks, and running with a considerable degree of rapidity. While fevers are frequently produced in the fens of Lincolnshire, few arise on the banks of the Thames." Again Dr. Fordyce says, "Since water being applied in a mass, that is to say, if a man immerses the whole, or any part of his body in water of the temperature of the atmosphere, in which he remains for some time, or if he throws water of such heat in his stomach, no disease ensues: and since water in small particles in the atmosphere applied to the body, is of the same heat with the atmosphere, and is often applied to parts of the body only, and still produces no fever; *it cannot be the mere application of the particles of the water that produces the disease; it*

*must therefore be something that they apply to the body, which occasions it. What this may be is not very clear.*"*

Here we have an admission on the part of the ablest defender of this recently revived opinion, which amounts to an acknowledgment that the whole hypothesis is untenable.

I will adduce a few facts, and leave the reader to his own inferences.

In the summer of 1823, the ponds in the neighbourhood of this city were quite full, for the rain had fallen in copious and heavy showers early in the season. Yet the town and country adjacent were healthy.

Pringle informs us of a similar fact, as witnessed by himself in Holland. Senac records the case of a city in proximity to a lake, whose inhabitants remained healthy until the lake was drained, when a fever of a malignant character speedily followed.

Ferguson, in his luminous paper on Marsh Poison, republished in the 7th vol. of Chapman's Journal, has the following remarks:—"In some ships of our navy, the fresh water, instead of being put in casks, has been preserved in bulk, by constructing a large open tank, of tin or lead, at the bottom of the hold, without in the least affecting the health of the crew, though they slept immediately above it." He adduces other instances corroborative of his own assertion that "aqueous putrefaction" will not originate the poison termed marsh miasm.

Bancroft has accumulated a mass of documentary matter, subversive of Dr. Fordyce's theory. He refers to exhalations from the sea, and from peat-bogs, as directly disproving the hypothetical suggestion that fever is attributable to mere aqueous exhalations, or to the combined operation of heat and humidity, independent of some adscititious element. I regret the necessity of dismissing this part of my subject without an ampler illustration of it; and would most earnestly refer the reader to Ferguson and Bancroft for a more complete explication.

* Fordyce on Fever, pp. 67 and 68.

The amount of all that is recognized as veritable on this point is, that though heat is the principal agent in eliciting the noxious element of bilious fever, from the dormant state in which it lies, yet that it alone will not produce that disease.

Heat is a frequent exciting cause of bilious fever, and may produce insulated cases of that disease, apparently independent of marsh effluvia, or an epidemic constitution of the atmosphere. Excess in drinking spirituous liquors, or in eating, will do the same. The chemical qualities of the atmosphere have nothing to do with the production of epidemic fever. It has been found that in the Pontine marshes, the oxygen, hydrogen, and carbonic acid gases, bear the same relative proportion to each other, that they do on any elevated salubrious spot.

I must advance to the discussion of the second general proposition, viz: that bilious fever does originate in the majority of instances, when it assumes an epidemic character, from the presence and agency of some potential substance, or materia morbi, designated by the terms marsh poison, marsh miasm, &c. The word *miasma* in Greek signifies any thing which pollutes, or corrupts; according to which derivation, the familiar phrase marsh miasmata in the plural, is not amenable to any criticism from any hypothetical ambiguity, involved in it. What is meant by the expression marsh miasma is merely the statement of a fact, that a certain emanation of a polluting quality, owes its existence to marshes, or to impure stagnant water, acted on by a hot sun. Those who deny the existence and agency of such an emanation, suppose that they are taking high but defensible ground, from which though they make no encroachments on the field occupied by their opponents, yet they confidently rely on their entrenchments to roll back the tide of war as it threatens to level their foundations to the earth. In other words, by giving a positive denial to the existence of marsh miasma, they endeavor to throw the labor of proof and demonstration on those who contend for its reality. Now let us shift the ground, and take these non-miasmatic physicians on their own gratuitous supposition. Suppose, for what will not supposition accomplish? that there

is no such substance as marsh miasma, and that the many things which have been said and written about it, are but the idle effusions of those who were misled, by an "*Imago vana, quæ porta fugieus eburna somnium ducit.*"

To such gentlemen I would address myself as follows:—Do you admit the existence and agency of contagious matter, exercising its dominion through the medium of the atmosphere? Their affirmative answer would be given, without hesitation. Take for an example measles, or hooping-cough. You allow that these are contagious diseases, communicable through an atmospheric medium. Have you ever detected the morbid element that floats through the air, which emanating from patients afflicted with either of those maladies, is capable of imparting a like disease to the systems of those who have never been shielded from such an attack by a previous visitation of the affection? And yet you contend with exceeding pertinacity, that measles and hooping-cough, are produced by undetectable and inappreciable materiæ morborum or elements of disease, which have never been smelt, seen, felt, or analysed by chemical experiments. It will be replied, that we see the disease in the living human system, and that from this source it spreads around. But do we not see the actual presence of stagnant water, operated on by a hot sun, and in a sequence undeviating as that noticed with regard to the communicability of measles and hooping-cough, does not bilious fever, in some of its forms or types, make its appearance in a consecutive order, as consequential to such a conjuncture of natural phenomena? Then the actual subsistent presence and agency of marsh miasma in the atmosphere, are as demonstrable as the presence and agency of contagious effluvia. You are incapable of communicating either measles or hooping-cough by inoculation—absolute contact is not requisite to impart either malady—there is then a something, termed contagious miasm or virus, coming from a patient laboring under either affection, which infringes on the unprotected systems of persons in health, and kindles up a like malady. The character of measles or hooping-cough, is the same in its essential features and complexional hue, all over the globe. A

prevailing epidemic may impress certain modifying influences on both of them, but never obliterates the distinguishing characteristics of either malady. So, wherever a hot sun and marshy soil are found, the type or character of the fever produced by their co-operative agency is the same—varying in *degree* but not in *nature*, according to the intensity of the solar power, and the eligible condition of the soil for the evolution of such pestiferous exhalations. Some non-miasmatic physicians, escaping from the enthralment of what they deem visionary absurdities, soar to the moon in hope of finding a rational solution of the difficulties presented by epidemic fever. But the advice of Horace will come in suitably here—

Dum vitat humum, nubes et inania captet.

Whilst he avoids the ground, he takes hold of the clouds and emptiness. To those who prefer a "visit to the moon" rather than a belief in marsh miasm, I would say, that I have neither time nor patience to attempt the flight.

A few facts must now be brought to bear on this point; and the following are altogether incapable of rational solution, unless we admit the existence of marsh miasma.

Dr. Lind states that whenever the sailors were allowed to sleep on shore, on the coast of Guinea, particularly in the Island of St. Thomas, they were certain, almost to a man, of being destroyed by fever, whilst the rest of the crew, who had not visited the shore, escaped.

Dr. J. Johnson adduces a fact of like scope, with regard to the fatal Island of Edam, in the East Indies; not a man, says he, who slept a single night on this fatal spot escaped an attack of fever, and every individual thus attacked died, except three or four, who were under the mercurial impression.

Lancisi has made similar remarks with regard to the Pontine marshes.

Dr. Rush states, that a family in Philadelphia, were afflicted with bilious fever for several summers in succession, the neighbouring families remaining healthy, until the attending physician pointed out a duck puddle in the yard, as the probable origin of the sickness, which being filled up, health was restored to the inmates of the house.

But analagous facts spring up on every part of this broad field of inquiry, and like the drops of blood from the fabled head of Medusa, which turned into serpents, our feet become entangled in the multitude of melancholy examples, which beset us on every hand.

I will give one other fact, new to the profession, communicated by a late distinguished man, of great intellectual attainments. Bishop Heber, in his travels in British India, p. 374, vol. 1, speaking of his visit to the Himalaya Mountains, says, he had to traverse a tract of woody country, of which he writes in the following terms:—"I asked Mr. Boulderson" (who appears to have been an intelligent English collector, living in this part of India) "if it were true, that the monkeys forsook these woods during the unwholesome months. He answered that not the monkeys only, but every thing which had the breath of life, instinctively deserts them, from the beginning of April to October. The tigers go up to the hills, the antelopes and wild hogs make incursions into the cultivated plain; and those persons, such as dak-bearers, or military officers, who are obliged to traverse the forest in the intervening months, agree, that not so much as a bird can be seen or heard in the frightful solitude. *Yet during the time of the heaviest rains, while the water falls in torrents, and the cloudy sky tends to prevent evaporation from the ground, the forest may be passed in tolerable safety.* It is in the extreme heat, and immediately after the rains have ceased, in May, the latter end of August, and the early part of September, that it was most deadly." The above facts, given by a pious and learned man, who had no medical theory to establish, outweigh all the subtle and argute reasonings of the anti-miasmatic physicians, from the philosophic Fordyce, down to most ordinary contributors to our medical journals.

I must decline giving any facts from my own observation—referring the reader to my paper, published in the 8th vol. of Chapman's Journal, on the epidemic fever of 1822, as it prevailed in Louisville and its vicinity, for some additional proof on the subject.

Though miasmatic exhalations have a real existence, se-

parate from the ordinary appreciable qualities of the atmosphere, yet they are susceptible of a more rapid transmission, as well as a more concentrated application, by a union with moisture. Even the pungent and volatile aromæ of plants require some degree of humidity to diffuse themselves. The electrical fluid, though an imponderable substance, employs the aqueous particles of the atmosphere, as a medium for its transmission and more extensive agency. The fact, that the operation of miasma on the human system is aided by the presence of moisture in the atmosphere, accounts for the greater degree of danger to be apprehended after nightfall, and in humid weather.

Those persons who inhabit houses that have no cellars, or the cellars of which are filled with water, are far more liable to attacks of fever in our climate than those who live on more elevated and arid sites. Upper stories for bed chambers are, therefore, preferable to the lower, as has been witnessed frequently in the Indies.

Miasmata are transmissable only a limited distance—water absorbs them, as was proved when the British army lay at the fatal island of Walcheren; the ships anchored a little distance from shore escaped their destructive presence. Trees, or rows of buildings, arrest them, as is seen in Rome, where their operation is confined to particular streets.

The sources of marsh poison are the muddy sides of creeks and rivers, mill ponds, and other stagnant waters, which present to the sun a surface upon which the *drying process* can be established. The fact that the noxious element is eliminated during the drying process, was long since observed, though accounted for on untenable, visionary grounds. In the translation of Lancisi's work on the noxious exhalations of marshes, to be found in the 13th volume of the New-York Medical Repository, we find the following remarks:—"Among the Latins, we read that M. Varro speculated on this subject, and ascribed the mischief to swarms of insects. 'It is worthy of remark, he writes, in marshy places, *that as they dry up*, there are produced certain very small animals, too minute for obser-

vation by the eye; which being taken into the body by the mouth and nostrils, are the cause of different diseases.' "

"Palladio has expressed himself in nearly the same terms, where he says; 'A marsh is to be avoided upon every principle, especially on the south or west, or if it usually *dries up* in summer, because it generates pestilence," &c.—pp. 244–5.

However exceptionable to a sound inductive spirit of research, the hypothetical figments of these ancient generalizers may be, yet they state facts not controvertible by the cavils of any non-miasmatic physician. Here then the question may be left;—the few facts above quoted are mere drops, to the full tide of proof that rolls its broad waves along the deep channels of medical discussion; and upon which the most sceptical may, if he *will*, be quickly conveyed into the haven of truth.

The third general position, to which I must now turn the reader's attention, is the origin of bilious fever from an epidemic condition, or constitution of the air. As all sound physical knowledge rests on a correct and comprehensive survey of the prominent facts, which have relation to the topic to be elucidated, and as history is philosophy teaching by example, I will advert to Noah Webster's work entitled, "A brief History of Epidemic and Pestilential Diseases," for a species of evidence not easily set aside, and which goes far to obviate the sceptical objections made to the existence of a pestilential state of the atmosphere. Mr. Webster, by his profound investigations, establishes the fact, that bilious fever, as well as influenza, often has its origin in a peculiar noxious state of the air. To his erudite work I must again refer for a more expanded illustration of this remark. My paper merely demands a quotation from that author. Influenza is a disease owing its origin to a wide spreading morbid condition of atmosphere, which is irrespective of its physical mutations. "This epidemic, says he, is evidently the effect of some insensible qualities of the atmosphere; as it spreads with astonishing rapidity over land and sea, *uncontrolled by heat or cold, moisture or drought.*"—p. 34.

He gives forty-four instances of influenza, occurring in different years from the 1174 down to 1797, from which it is evident, that this epidemic prevailed indiscriminately in cold and hot, in dry and moist, seasons of the year. Sometimes it burst forth from the icy regions of the north, sometimes it commenced its career in Asia or Africa, and at other times it sprang up in the wilds of America.

But I will refer to another malady far more destructive than influenza, which is dependent, as an epidemic disease, on a pestilential constitution of the air. Cholera Morbus is scarcely known in America as an epidemic disease; but it is generally recognized by American physicians as a variety of that congener of bilious affections, seen during summer and autumn throughout the Union. In the East Indies it is known as a fell destroyer of the species. Of this epidemic the best author on the subject, writes thus—"It is proved by the various reports, that the cholera has appeared, and *was equally virulent*, during all states of the atmosphere—amidst all diversity of the circumstances of the people." Again—"The disease has been capable of exerting its influence in every state of the atmosphere, *so far at least as is evident to our senses, or determinable by instruments.*"*

Additional proof is superfluous on this point. Analogy, though neither proof nor illustration, is to be regarded, in contested cases, of some moment, in bringing about a satisfactory decision, provided the case from which the analogy is drawn, bears a manifest resemblance in some one point to the case to be elucidated. This consideration receives full support from the relative aspect that cholera morbus bears towards bilious fever. These diseases are evidently, in our country, the products of similar causes, their treatment is founded on a generally conceded similitude of pathology, and they sustain at times an analogy in the obscurity which envelopes their origin.

In the year 1822, epidemic bilious fever, in its several types, prevailed in Kentucky, Indiana, Virginia, Pennsylvania, and

* Johnson's Medico Chirurgical Review, July, 1825, pp. 134 and 135

several other states of the Union. In Kentucky and Indiana, there was an unprecedented quantity of rain during the summer of that year. In Pennsylvania and Maryland, there was a considerable drought during the summer. In the Carolina's there was nothing remarkable, and yet they were visited with the fever. Louisiana and Mississippi enjoyed their ordinary seasons, and yet they were extensively assailed by bilious fever. In our county, Jefferson, the most healthy sites were attacked by bilious fever in that fatal summer and autumn. The same fact was observed in the more elevated region constituting the western part of Pennsylvania.

Analogous facts might be adduced from the historical accounts given of epidemic fever, by several eminent authors. But as the design of this short paper is merely to indicate the outlines of this wide territory of indagation, we must terminate the inquiry without any further accession of proof, or protraction of argument.

Before laying down my pen, I will give a part of Dr. Smith's synopsis of the remote causes of infection; comprehending two species of *Koino*, or common miasma.

ORDER II.

INFECTION.

*Genus I.*

Koino Miasma.

*Species* 1.

Protokoino miasma—producing intermittent and remittent fever.

*Species* 2.

Perkoino miasma—producing yellow fever and plague.

The Greek ordinal numeral *protos*, and intensive particle *per*, are prefixed to the word *koino*, to denote, the first the mild and the second the malignant species, of miasmatic effluvium.

Having presented two grounds of contemplation—one narrow and simple and merely confined to the direct physical influences of the atmosphere; the other more large and complicated, comprehending the agency of the whole series of insensible metcorations in the production of bilious fever, I cannot close, without again referring the inquisitive reader to

the best writers for information on this highly interesting subject—a subject to which every physician, of the least professional ambition, and philanthropic sensibility, should have all his faculties and energies of mind sensitively alive.

Noah Webster on Pestilence; Dr. E. D. Bancroft on Yellow Fever; Dr. Joseph Mather Smith's Elements of the Etiology and Philosophy of Epidemics; Dr. N. Chapman's eloquent Essay on the Causes, Phenomena, and Laws of Epidemics, with suggestions for their prevention and suppression: which is to be found in the Philadelphia Medical Journal, commencing at p. 352, vol. 8, and running through several numbers; and Ferguson on Marsh Poison—Chapman's Journal, vol. 7,—are books and papers relative to this subject, which may be studied with equal pleasure and profit.

*Louisville, Ky. January*, 1829.

---

ART. II.—*Facts and Analogies designed to show that Hydrocyanic Acid is probably the cause of Autumnal Fevers.* By G. S. B. HEMPSTEAD, M. C. of Portsmouth, Ohio.

To *ascertain* and *identify* the causes of epidemic diseases, is certainly a desideratum in our profession. That *Malaria*, or the exhalations from decaying vegetable and animal matter are the cause of our autumnal fevers, by the unanimity of the profession, seems fully established. It is equally certain, that the Dysenteries, Choleras and Diarrhœas of the summer months, owe their origin to the same cause, differently modified. The gases, which result from the process of decompo. sition, have a specific action on the system; and, uniformly, under similar circumstances, will produce similar effects; whether applied to the stomach or surface, and this through the medium of the nervous system. In proof of which, we will only observe, if an astringent be applied to the stomach, or any part possessing sensibiltiy, by a continuation of sensation its specific effect is excited in a distant part; and because we see its effect in a *diseased* distant part, we say one sympa-

thises with the other; when, in fact, the whole nervous system is, to a certain degree, affected in a similar manner. A blister, by its specific action on the nerves of the part to which it is applied, produces a corresponding effect on the sensibility of the whole system; and thereby relieves disease in a diseased distant part; so of opium, assafœtida, tonics, &c. Cold water applied to one extreme of the body will restrain hemorrhage from the other: This is not from sympathy, for if applied to any other part of the body equally sensible, it would produce a similar effect; nor by revulsion, for it lessens the calibre of the vessels and would force more blood on the distant part; but by a continuation of sensation throughout the whole nervous system, every blood vessel is lessened in its caliber. Hence miasma applied to the nose, fauces, stomach, lungs, and even the surface of the body, is capable of producing many of the phenomena of fever. This gas being stimulant will, after a longer or shorter time, produce indirect debility; consequently from a long continued application of it, we become accustomed to its action, and require a larger dose to produce its specific effect. Besides, from the long continued heat of our climate, our bodies become relaxed, and a state of indirect debility is not so readily induced. Hence natives of low latitudes and marshy countries, are less liable to autumnal diseases, than those from a pure and tonic atmosphere, whose fibres are tense and circulation active. The latter are more readily thrown into a state of indirect debility, a torpor succeeds, and the usual consequences which arise from suspended secretions and excretions must be the result. Our professional brethren, after having ascertained the fact, that the exhalations from decaying vegetable and animal matter, are the principal, or only cause. of autumnal disease, have tacitly agreed to suspend their investigations. Having ascertained that heat and moisture are necessary agents, their labors have ceased, without calling to their aid the assistance which chemistry within a few years has furnished. In fact, we know but little more of the causes of autumnal diseases, than that they exist from the effects which they have on our bodies. The

object of these remarks is to reduce, *if possible*, these causes to a tangible form, to give them 'a local habitation and a name.' If we should not succeed in convincing the profession of the *nature of marsh miasmata*, our object will not be lost if we can direct the attention of medical men to an investigation of this interesting and important subject. Chemistry demonstrates clearly to us the constituents of vegetable and animal matters; but in the laboratory we must exclude one agent which is necessarily present in the production of malaria; this agent is atmospheric air, hence it has been imposible to produce the same results from the retort as are produced in the open air. Analysis shows, that from the decomposition of vegetable matter, we obtain hydrogen, carbon and azote, in certain definite proportions; which, when united agreeably to the rule of chemical equivalents, must produce *hydro-cyanic acid*. It may be said, that in the decomposition of vegetable substances, we find the azote in too small a proportion to form the above acid, but this deficiency we supply from the atmosphere by the aid of chemical affinity. The following remarks, from a very celebrated writer, will elucidate our views on this subject. "It has been ascertained, that a clayey soil, when moistened, will attract the oxygen of the air and leave its azotic part not sufficiently guarded, to support life, and it is found, that districts become unhealthy chiefly when the earth begins to appear, in consequence of a diminution of the water. It is singular that Linnæus, with a view to prove the cause of intermittents to be an argillaceous earth, has traced very minutely the prevalence of intermittents in clayey countries; a circumstance which may be explained from the views just assigned." The facts in the above paragraph, we are willing to admit; but we cannot admit, that after abstracting a portion of oxygen from the atmosphere the compound is still atmospheric air, for we believe that the azote is already at the lowest state of oxidation. We would rather explain it thus, that in consequence of the abstraction of oxygen, a portion of azote is left uncombined, and, therefore, ready to unite with any substance with which it may come in contact, for whieh it has an affinity. It meets with the carbon, hydrogen and

a small portion of azote evolved from the vegetable, these combining chemically, in their definite proportions, and there is nothing to forbid it, must produce the *hydro-cyanic acid;* for the carbon and hydrogen of the vegetable, with the azote obtained as above, are very nearly in the definite proportions, to constitute this compound. That this acid is produced by the decomposition of animal matter, we have the testimony of the ablest chemists of our day. Hence diseases may be produced by putrid animal substances, without any decomposition of the atmosphere by moisture; because animal matter contains a sufficiency of azote, without drawing it from a foreign source. "If animal substances be exposed to a high temperature, azote and ammonia, or hydrogen and carbon are produced;" hence the hotest seasons are not the most unhealthy, for the azote is separated, and the ammonia formed, neither of which is deleterious. This acid boils at the temperature of 79° of Fahrenheit, and is highly volatile; hence that season which supports a temperature between 70° and 85°, *cæteris paribus*, is most productive of disease; for experience teaches us, that those seasons which have supported a temperature of from 85° to 95° are comparatively healthy. After a diminution of temperature, the process of decomposition is checked, gas is no longer evolved, and being specifically lighter than atmospheric air, its effects are no longer visible. We are told that this acid is instantly decomposed by contact with chlorine gas. Is not this a strong argument in favour of this identity, from the known efficacy of muriatic fumigations in infectious diseases? Having attempted, by chemical facts, to prove the identity of *marsh miasma* and *hydro-cyanic acid*, we will now compare the effects of each, on the human system, and by analogy endeavour to prove that they are identically the same. The effects of miasmata are, first to stimulate, and then to depress the powers of life; producing prostration of strength, lowness of spirits; unwillingness to move; pain in the head; vertigo; horripilation; chills and tremors; catharsis; emesis; ptyalism; accelerated pulse; loss of sensibility; urtication in those subject to it; convulsions, and an increased secretion from the liver. On adults, it has a more sensible effect than

on children. Phthisical and asthmatic patients experience relief from their sufferings, and enjoy a good degree of health and spirits, and are sometimes blessed with a removal of their complaints, by exposure to an atmosphere impregnated with this gas. It is not unfrequently the case, during the prevalence of a severe epidemic, that persons are suddenly deprived of all power of locomotion, all the functions of the system, except the circulation and respiration, cease for a short time; in a few minutes it passes off and they are able to resume their avocations. This has happened frequently during the prevalence of the yellow fever, and in a few instances within our own observation; resembling the effects which are produced by hydro-cyanic acid, when applied to different animals. It is now clearly ascertained, that hydro-cyanic acid may be obtained, in the laboratory, from a variety of vegetables; that some possess it already formed in the woody fibre, and in the seeds, and when thus obtained, may be absorbed by water, and given as a medicine. Those, who have used it most frequently, assert that at first it stimulates, and then distroys sensibility and muscular power, producing unwillingness to move, pain in the head, vertigo, horripilation, cold extremities, catharsis, emesis, ptyalism, accelerated pulse, convulsions, urticaria in those subject to it, and an increased secretion from the liver. On phthisical and ashmatic patients it has a most happy effect, if not to cure, at least greatly to relieve the distress and pain. It has a greater effect on full grown animals, than on those not yet arrived at maturity. We are informed by Dr. Chapman, that he found spirit. terrebin. the most effectual remedy in the bilious vomiting, which occurs in yellow fever; and Orfila declares it to be the only known antidote to the poison of hydro-cyanic acid. Dr. Murray has lately ascertained, that ammonia and acetic acid, in combination, form a valuable antidote to this poison. The value of this mixture, in bilious vomiting and autumnal fever is well known to the profession, Some experiments have been made on this subject which confirm the above facts, but as they were insulated, we shall withhold them until an opportunity shall offer to test them further. Thus far we have

attempted, chemically and analogically, to prove the identity of these two articles, and if we have not convinced, we hope, at least, to have so far made proselytes of the profession, as to induce a candid examination of the subject.

# REVIEWS.

—

ART. III.—*De la Lithontritie ou Broiement de la pierre dans la Vessie; Par le* DOCTEUR CIVIALE. *Avec cinq plauches, pp.* 254, *A Paris* 1827.
*Lithontrity, or Breaking down the stone in the Bladder &c.*

Having been among the first in the United States, who were made acquainted with the ingenius inventions of Doctor Civiale, we feel a degree of self-reproach, at having so long deferred a notice of them. By the delay, however, we have come into possession of his book, from which and other documents—manuscript and printed—we hope to make some amends, both to him and our readers, for the procrastination. As far as we know, Dr. Samuel Brown, formerly professor of the Theory and Practice of Medicine in Transylvania University, was the first person who promulgated, in this country, a notice of Dr. C's practice. Being on a scientific visit to Paris, in the year 1824, on the 10th of August, he wrote to the Editor as follows:—

"I have had the uncommon good fortune to witness seven operations by Civiale, and have had every aid he could give me in order to make me master of it. It consists in reducing the stone in the bladder and taking it out without *shedding blood*. It is quite as painful to the *Surgeon* as to some of the *Patients*. They all laugh and talk during great part of the operation, and can all appear in the street the next day and often change their lodgings the same night. No one has died of it, or will probably die—I have seen it performed on a child nine years old, and on two men of seventy, who made very trifling complaint. Richerand attended with me yesterday morning and expressed the highest approbation; Percy and Chaussiere have done so in print, and Surgeons of great note from Russia, Poland, Vienna, Berlin &c. have assured me of their warmest approbation. Some of the great Surgeons, the High Priests and Scribes, object, and still offer victims to Moloch. I am satisfied, and can satisfy you. This is worth my voyage to Europe. Dumas had commenced dissolving the calculus by Galvanism, as I had proposed last year, and was succeeding; but he assured me that he thought Civiale had rendered all attempts of that kind unnecessary. This great improve-

ment is in part attributable to Amusat's anatomical discovery, relative to the Urethra."

As Dr. Brown was reputed to be a sort of enthusiast, in regard to discoveries and improvements in the profession, his estimate of the Lithontrity of Dr. C. was received with some distrust, by many American Surgeons; and these doubts were not a little confirmed, by the trials which were soon after made by several surgeons in our great professional metropolis. On his return, he brought over drawings of the principal instruments used by Dr. C., copies of which were put into the hands of Mr. Lukens of that city. But they seem not to have been very accurate; and, in addition, that ingenious artist conceived, that certain variations might be made in their construction. This was accordingly done, and it was with these new tools, that American Surgery went to work. The results, we believe, were not encouraging; and although no people are more ready to adopt improvements—either real or pretended—than the American, Lithontrity has not as yet found any practical advocate among us. Meanwhile it has been practised, not only in Paris but other cities of France, with great success; and among other recent testimonies, in its favour we may refer again to that of Dr. Brown; who, on his late return from a second visit to Europe, assured us in conversation, that he had again witnessed several successful operations by Dr. C. and that the merits of Lithontrity were becoming generally acknowledged in France. The opinions and observations of our friend Dr. La Roche, one of the Editors, and at present a correspondent, of the highly respectable North American Medical and Surgical Journal, are to the same point. On the 11th of September, 1828, he writes, from Paris to his coadjutors, in the following language:—

"Having myself seen M. C. operate several times under a variety of circumstances since my return to this city, I am prepared to affirm that the utility of his method has even gained in my estimation. M. Lisfranc, whose authority in surgical matters is not to be despised, publicly remarked, the other day, that a surgeon was in his opinion a criminal who would not, whenever the thing is possible, resort to lithontrity; and that the knife should only be used

when the first method failed, or when, from some peculiarities of the case, it could not be attempted. This strong language, and coming, as it does, from a man of M. L's high standing in surgery, is calculated to prove that M. C's. method (which on the whole appears to answer better than any other of the same kind) deserves to attract a little of our young men's attention when they visit Paris, and that it ought to be put in practice at home. M. Lisfranc, in proof of the decided advantage of lithontrity over the other operations for stone, remarked that, agreeably to some comparative tables made at Paris, it appeared that there generally died one out of five of patients cut in the various hospitals of that place; whereas, of about one hundred and fifty operations by the grinding method, its most bitter opponents had not been able to find out more than five or six fatal instances. And let it be remarked, moreover, that most of these fatal cases occurred in the hands of surgeons who were quite inexperienced in the use of the instruments." p. 20.

In another part of the same communication we are told, that the celebrated Scarpa of Italy, who had, at first, expressed an opinion unfavourable to the method of Civiale, has entirely withdrawn his opposition; and, finally, that in France there are, already, surgeons who devote themselves exclusively to the practice of Lithontrity.

We have chosen to present to our uninformed or sceptical readers, the testimony of these respectable and disinterested witnesses, in favour of the new method, rather than draw upon its author for proofs; and having, as we trust, said enough to inspire confidence, in that, to which we are converts ourselves, we shall proceed to say in what the new method consists.

The great object of our author, is to make known his lithontritic method, but his book contains much general information concerning urinary calculi, especially their physical characters and habitudes. The introduction, which runs through more than 50 pages, is devoted to a consideration of the different methods which have been proposed and practised, for ridding the bladder of calculi. These are *solution*, *extraction*, and *disintegration*, or breaking down. The difficulties and accidents of the two first (including a heavy mortality chargeable to extraction) are enumerated, in the spirit of one who believes in the great superiority of the last; and it is

impossible to contemplate them, without feeling that a better method is desirable. Doubtless our author has presented them in the strongest light which the facts admit; but with all just allowance for the partiality of an inventor, it must be admitted, that multitudes have fallen victims to the gorget. Indeed, in the close of the article, our author expresses the opinion, that not a little concealment has been practised, in regard to the ill effects which have resulted from the cutting operation, lest patients should be deterred from submitting to it; a suppression of the truth which could not justly be condemned, as long as lithotomy was the only resource of the profession. In this country, however, the proportion of deaths from the operation, it appears to us, has been less than in Europe; a result more attributable, perhaps, to the bad air of *their* crowded hospitals, than to the superior skill of *our* lithotomists: among whom, however, there are not a few, who would distinguish themselves in any country.

The first chapter of Dr. Civiale's treatise is appropriated to the physical characters of urinary calculi, and to the causes which lead to their formation.

"Calculi differ in their *form*, their *density*, their *size*, and their *number*.

"In form they present a great variety, resulting from the elements of which they are composed, and the circumstances under which they are deposited. Calculi composed of the oxalate of lime, are almost always round and mammillary; those which consist of phosphate of lime and magnesia, have a less determinate form; but are generally round, or elongated and rough; those of lithic acid and lithate of ammonia, have in general an ovoid form, slightly flattened. When there are numerous calculi in the bladder, they, commonly, present a number of facets; and we see in many of these cases anomalies which are owing to particular circumstances.

"When the calculus fills the bladder, that organ serves as a kind of mould, which, in some degree, determines its form. We find, then, upon it two furrows, corresponding with the orifices of the ureters, along which the urine passes from those tubes.

"Calculi, the immediate causes of which, are foreign bodies, introduced, accidentally, into the bladder, have a form more or less similar to their nucleus. La Motte relates a case, in which the stone was formed around an iron wire. It was, says he, as long as the breadth of four fingers, and very slender.

"The hardness or density of calculi, presents differences which depend, not only on their composition, but also on their age. Those formed of oxalate of lime, are, in general, the hardest, except the siliceous, which are rare; those of lithic acid, are, generally, softer; those formed of the lithate of ammonia and the phosphate of ammonia and magnesia, have less density still; those composed of the phosphate of the lime, are, of the whole, the most friable. It should be observed, that all the varieties of calculi differ in hardness, according to the proportions of their constituent parts.

"We find some calculi a great deal harder in one part of their surface than another. Certain calculi are porous, and may be divided with great facility: In examining their fragments we perceive, that they are very hard and brittle. I have observed many facts of this kind.

"The size of calculi depends upon their age and their composition. They sometimes increase with a frightful rapidity. I have seen two patients, in whom calculi, in the space of six months, acquired the volume of walnuts. This rapid developement indicates with considerable certainty, that they are formed of the phosphate of lime, and are very friable. Calculi of this nature are susceptible of acquiring a greater volume than any others. Those of lithic acid and of the ammoniaco—magnesian phosphate, do not, in general, acquire so great a size, until they have lodged many years in the bladder. Those formed of oxalate of lime grow still slower.

"It is evident, that calculi can only be numerous, when they are small. In reference to their number, they present remarkable differences. Generally, we find only one or two; but Boerhaave informs us, that he saw even three hundred; a number that might appear incredible, if it were not justified by observations made in our own times. Mr. Murat, surgeon in chief of the Hospital of Bicetre, found six hundred and seventy-eight, in the bladder of an old man; and Dr. Beauchene found more than three hundred, in that of a man eighty years of age. We know, also, that upon the death of the celebrated Buffon, there were found in his bladder, fifty-five calculi of a triangular form. Flurant of Lyons extracted from a patient twenty-four calculi, of which sixteen had the volume of a pigeon's egg. Dr. Baneal, of Bordeaux, met in another patient, with twenty-eight of nearly the same size. Desault extracted more than two hundred from a priest of Pontoise; and I have taken sixteen from Mr. Thubeuf, Rector of a Nogent-le-Roi. In general when the bladder contains many calculi, they are composed of lithic acid. Mural calculi are commonly solitary, nevertheless we sometimes meet with many in the same patient. Mr. Maudhuyt, whose case I have reported, had two calculi, one of which was Mural." pp. 2—5.

Dr. Civiale thinks it imposible to determine what proportion of the inhabitants of any country, are affected with calculus: but it is possible to ascertain, with some certainty, at

what age, and under what circumstances, they become affected with this malady. It appears that more than half who experience it, have not yet attained the age of puberty. According to the observations of Saucerotte, it is rare before the fourth year, but very frequent between the fourth and ninth; the proportion afterwards diminishes, to re-appear in a less degree between the fortieth and sixtieth, after which it decreases to the end of life. From the observations of the same surgeon it results, that the number of females affected with this malady, is to the males, as one to twenty four.

On the ætiology of calculus, our author says but little. It is most common in temperate climates, like our own. We are ignorant of the degree to which irregularities of regimen may be instrumental in its production. Excess of animal food is a frequent, and a sedentary life, a principal cause. Long continued retention of urine in the bladder, may be mentioned as another. But one of the most obvious, is the introduction of a foreign body through the urethra, which causes a deposition upon itself, of calculous matter. We recollect to have met with one case, in which a blow upon the lumbar region, causing temporary paralysis of the lower extremeties, was followed by the speedy developement of phosphatic calculi. An opinion is prevalent in the western country, that the use of limestone water favors the generation of calculi. Of the reality of this cause we have our doubts, but cannot at present enter into the inquiry.

The second chapter of our author's work is devoted to a consideration of the morbid influences of calculi upon the animal economy. The symptoms at the beginning are slight, and almost limited to the urinary system:—

"As the disease increases, the symptoms are greatly multiplied and aggravated, involving the functions of the body generally. The pains which were at first transient, become more constant and intense, extending to the perinæum, the groins, and even to the kidneys; a painful sense of weight is felt about the anus; the urine is glairy and fetid; its expulsion is frequent and increasingly painful: the slightest exercise augments all these symptoms; meanwhile the digestive functions become disordered; febrile movements manifest

themselves, and the patient, if not relieved, falls into an alarming situation; the urine suffers greater vitiation, the pains become more excrutiating, and the fever more constant; the whole nervous system becomes seriously disordered, and the patient dies."

"Upon examination after death, the bladder presents traces of an inflammation, sometimes superficial, but oftener intense and carried to gangrene; its mucous surface is often deeply ulcerated, and its muscular tunic greatly developed, so that its parieties are thickened and applied closely to the stone. I have seen a calculus the asperities of which were implanted in them. In other cases, the organ acquires an unnatural capacity, when its parieties are attenuated, and we scarcely perceive a trace of inflammation. The neighboring parts partake more or less of the same pathological condition. The prostate gland is commonly indurated and sometimes in a state of ulceration, a blackish teint shows itself in the track of the urethra, especially, near the bladder; the ureters are enlarged, and present in their whole course, traces of inflammation; the kidneys are almost always affected; their volume is augmented and they present various alterations of tissue." pp. 8—10.

The third chapter is on the history of Lithontrity. It cannot be uninteresting to our readers to be told how the conception of this process, was excited in the mind of its inventor. Having long been distressed by the contemplation of the many cruel circumstances connected with lithotomy, he was led, in the year eighteen hundred and seventeen, into a course of unsuccessful experiments, for the dissolution of the stone in the bladder. While prosecuting these, it became obvious to him, that a preliminary measure, which should make him acquainted with the composition of every calculus, would be indispensibly necessary to the choice of an appropriate solvent. He was thus led to devise two instruments, by means of which he might seize the calculus, and detach from it such a portion as would enable him to determine its composition; it was the application of these instruments, that suggested to him the idea of mechanically breaking down the stone, so that it might be washed out of the bladder, and induced him to give up a chemical, for a mechanical method. The chapter contains a history of the progress of his inventions and discoveries, with an account of the various trials which preceeded the public annunciation of what he had achieved, but we shall not engage in its analysis.

The fourth chapter, a very short one, describes the urethra, as far as its anatomy is concerned in lithontrity. This organ may be divided into three sections—the first extends from the orifice to the bulb; the second from the bulb to the prostate gland; the third is surrounded by the gland:—

"The study of the last portion is of great importance in a practical point of view. Generally its direction, and its dimensions present no great variety; but they are subjected to changes from the diseases of the prostate." p. 49.

Chapter fifth brings us nearer to the main object of the book; and, indeed, treats of that which is the very foundation of the practice which it sets forth. An opinion is prevalent among the profession, that none but curved instruments can be introduced into the urethra; and if this were well founded, lithontrity could, obviously, have no existence. It is the object of this chapter to show, that *straight sounds and catheters may, with facility, be passed through the whole extent of the urethra*:—

"For a long time," says our author, "it has been thought impossible to penetrate into the bladder with straight sounds; and, therefore, these instruments were formed with a curve more or less adapted to that, which was attributed to the urethra. This point of surgical doctrine had received the sanction of ages, and even down to the present time, the introduction of a straight instrument was, generally, considered impracticable.

"Nevertheless straight sounds have been found in the ruins of Herculaneum; and the Arabian author Albucasis has transmitted to us drawings of such instruments." p. 52.

Among the moderns, this fact, so generally overlooked by the profession, was known to Lieutaud, Santarelli, Lassus and the authors of the Medical and Surgical Dictionary, published in 1772. But although straight sounds had long been known, very few rules for their use had been laid down; an omission the more to be regretted, as the manner of their introduction, differs essentially from that of crooked instruments. The following are our author's instructions for this purpose:—

"The surgeon should place himself on the right side of the patient, or between his legs. He must gently depress the penis, so as to bring it parallel with the thighs, which ought to be slightly flexed. The instrument, held in the right hand, is now to be introduced, and passes with facility to the symphysis pubis, which may be known by its resistence, and indicates, that we have reached the bulb of the urethra. Depressing the penis still lower, we direct the end of the instrument a little upwards, when it traverses the second or membranous portion of the urethra, and soon arrives at the prostate gland.

"Great attention to these rules is necessary, or else we may pierce the urethra, through the furrow that lies at the bulb, and carry the instrument even to the anus; an accident which has sometimes happened.

"The remainder of the operation requires still greater care. If the prostate gland is sound, it is sufficient, in most cases, to lower the hand, so as to direct the point of the instrument a little upwards, by which it will pass without difficulty into the bladder. But it is not the same when the gland is diseased, in reference to which it is not possible, however, to establish any general rule." pp. 54—5.

For exploring the bladder in search of a calculus, our author does not, however, recommend a *straight* sound. He thinks the ordinary curved instrument better adapted to the object, as it can be made to reach every part of the bladder. Of its introduction he does not speak, as being well known; and proceeds to make a few general remarks, two of which deserve to be translated.

"We ought," says he, "to prefer the sound to the catheter, as it may be introduced into the bladder when that organ is distended with urine, which often enables us to feel a calculus which cannot be found by the catheter.

"In some rare cases, we are obliged to vary the position of the patient, but we ought not to forget, that changes of posture are only useful when the bladder is full. It is in this manner. that we can determine by means of the sound if many stones exist." p. 57.

Our readers are now prepared, we trust, for a description of the instruments for lithontrity, with some occount of their application. The sixth and seventh chapters are appropriated to these objects, and we shall proceed to make such a digest of them, as may convey a clear idea of Dr. Civiale's method.

The apparatus consists chiefly:—

1. Of an exterior, straight, metallic canula, or sheath. For an adult it should be eleven inches long. Its diameter must vary from two to four lines. It may be made of silver, gold, platina, steel or copper—Dr. C. thinks silver the best. In operating, it is this part of the apparatus that is in contact with the urethra.

2. Of an interior tube, with one end slit down, and formed into pincers, called by Dr. C. *litholabes.* It must be longer than the other, and always made of steel. Its use is to seize and hold fast the calculus during the operation, and to withdraw the fragments when it is broken down. The pincers should consist of two, three or four branches; or rather the surgeon should be provided with several, adapted, by the number of their claws, to different cases and to the objects to be effected. They must be elastic, so as to expand when pushed beyond the inner extremity of the exterior canula; and their ends are flattened, rounded, and incurvated. They are not exactly of the same length, so that inclosing up they occupy, comparatively, but a small place, and form to the instrument a rounded head, which may be directed to any part of the surface of the bladder, with impunity to that organ. The pincers with two claws, may be used to extract small calculi from the urethra. Those with three branches, are preferred by the inventer for seizing, holding, and extracting the stone, in all ordinary cases. Those with four claws are only used under particular circumstances, which we need not enumerate. Sometimes one of the claws is moveable, and may be employed or removed at pleasure. The opposite, or outer extremity of the *litholabes* has a graduated scale which indicates the extent to which the claws are opened, and consequently the magnitude of the stone.

3. A perforating instrument, named by Dr. C. *lithotriteur.* It is this which, by a rotary or boring motion, penetrates the calculus and effects its disintegration. It is a solid steel rod, which is introduced through the hollow shaft of the *litholabes,* or pincers. Its head is armed with teeth, or projecting points, which act upon the calculus.

When the pincers are shut, this jagged extremity is so enclosed as to protect the bladder from its action. The other extremity is pointed, and, near the end, has a graduated scale, by which it may be accurately known how far the head of the instrument has perforated the stone. Dr. Civiale has devised two modes of augmenting the size of the aperture, made by the perforator:—1. by giving to the boring extremity a slight degree of curvature, by which it is made to describe, in the calculus, a much larger circle,—2. by forming the head of two parts, applied to each other longitudinally, and susceptible of being made to recede, so as to increase the diameter of the hole. Perforators of this kind are not so strong and solid as the others; but may be advantageously employed "when the stone is large, friable, and round."

Such are the implements which are introduced into the urethra and bladder. The remainder of the apparatus is composed of instruments, intended to connect these in their movements; to keep the pincers closed upon the calculus; to rotate the borer, and to project it forwards. Of this part of the machine it would be difficult to give an idea without the aid of the engravings, with which the book is illustrated; nor is a full description of them necessary, to the object which we have in view. They consist chiefly of a turner's lathe, in steel, the beam of which is six inches long. The permanent, or fixed puppet is to be screwed to the end of the outer canula, while the moveable, clasps firmly a leaden tube, open at one end, and containing a coiled steel wire, which projects an iron cylinder against the outer end of the perforator, and imparts to it a progressive motion. On the shaft of the perforator is a pulley, round which a turner's bowstring is passed, and thus a rotary motion is imparted by the hand of the surgeon.

The hollow shaft of the pincers, is prevented from passing into the bladder from the pressure of the borer against the stone, by a pressure screw, which passes through the outer tube, and by a button which is received against the external end of that canula, and which, at the same time, contributes to prevent the escape of the fluid from the bladder.

For the practice of lithontrity, our author, in his seventh chapter has laid down minute rules, of which we shall make but a brief abstract.

The operation may be performed at all seasons of the year. The patient must be prepared for it by an attention to the means of improving his general health, if it be impaired. If this even be good, he is to be subjected to a course of mild antiphlogistics; with a diet calculated to prevent inflammation. So much for the preparation of his general system. The urethra must be subjected to a special treatment, calculated to diminish its sensibility, and familiarize it to the presence of instruments. For this purpose, a flexible sound must be introduced, daily, for eight days or more, and kept in the urethra for ten minutes each time. Its size should be gradually increased, until the urethra will bear, without irritation, one that is equal in diameter to the exterior canula of the boring apparatus.

The patient being thus prepared, he is placed on his back with the pelvis raised, and warm water, or mucilage is injected into the bladder, through a canula. This instrument is then to be withdrawn, and immediately afterwards, the apparatus for the operation is to be introduced, in the manner already described for introducing straight sounds. The pincers are then to be expanded, and made to enclose and secure the stone. The hollow stem of the pincers is then to be immoveably fixed to the external sheath, or canula by a pressure-screw. The perforation may now be undertaken:—

"In commencing, it is necessary to work slowly. If the stone is friable, the perforator enters with facility; and a dull sound is emitted: when it is hard, the sound is more acute, and the progress of the instrument is slower." p. 73.

The boring may generally be continued ten minutes. On withdrawing the apparatus, the first urine that flows is colored with blood. The patient is ordered immediately afterwards to take a bath, and to observe a mild regimen. By the next day he has in general, recovered from the operation, and is ready for its repetition; to which he commonly submits with

less apprehension and greater confidence than before. The number of operations must depend on the size and hardness of the stone. The fragments are either discharged with the fluid contained in the bladder, or brought away by the pincers; and great pain should be taken to ascertain that they are all evacuated.

The eighth chapter, extending through 90 pages, is on the practice of lithontrity. It abounds in interesting cases, illustrating the operation, indicating the difficulties which may present themselves, and disclosing the circumstances which contra-indicate the method. It is impossible to read them without the conviction, that Dr. C. is a man of talents, caution and candour, whose claims to public confidence are of the highest order.

His cases and practical remarks, are divided into three series, or classes:—

"In the first series," says he, "I shall present only the cases of patients whose conditions were most favourable to the operation.

"I shall refer to the second, those in which the disease was far advanced, and offered complications which rendered the operation more difficult.

"Finally, in the third, I shall relate cases in which a successful resort to lithontrity was impossible." p. 76.

"The cases recorded in the first series, are not exactly similar; but in all of them the calculi had not attained to any great magnitude, or were few in number; the bladder was nearly sound; the urethra and prostate gland were healthy and well formed, and the general health of the patients was good. As our great object is to inspire confidence in the method of Dr. C. we shall translate the history of one of the cases referred to in this head, and without much selection, shall take one that was treated in the presence of a committee of the institute, and many other distinguished persons:—

"Mr. Gentil of Paris, aged 32 years, experienced for four years, a bad state of health, debility, impaired digestion and slight pains at the extremity of the penis. He entered the hospital of Caen, where they paid no attention to the last symptom. Sometime afterwards he returned to Paris; experiencing at all times more or less pain, and a

sense of weight about the anus. On revisiting Caen, he was sounded by Dr. Dominel, who experienced some difficulty in introducing the instrument. He came again to Paris, and towards the end of November, 1823, applied to Mr. Dupuytren, who ascertained the existence of a calculus, and prescribed the carbonate of soda with gum arabic. The patient took these medicines for eight days; when he consulted Mr. Boyer. The presence of a stone being established, that surgeon proposed the operation of lithotomy. A few days afterwards the patient sought the advice of baron Larrey. That practitioner, likewise, recognized the existence of a calculus, but advised the operation to be postponed till spring. The patient was still dissatisfied, as the mere idea of an operation, was insupportable to him. Nevertheless, the violence of his pains did not permit him to remain at rest, and he consulted Moulin, who made him carry in the urethra a flexible sound for fifteen days; when, on the 9th of January, 1824, he applied to me.

"I judged that lithontrity was applicable, and the operation was commenced by me, five days afterwards, in presence of a commission appointed by the Institute, and of Messrs. Larrey, Sue, Giraudy, Moulin, Ponget, Nauches and others. The existence of a calculus being established, to the satisfaction of all who were present, the bladder was filled with warm water through the hollow sound, which was used in the examination. After having withdrawn the instrument, I introduced the apparatus, selecting a canula, three lines in diameter. I seized the the stone, of which the part embraced by the pincers was eleven lines in diameter, and proceeded immediately to its destruction. The first effect was so decided, that I supposed the calculus to be friable; but after some minutes the resistance which the perforator experienced, led me to think that the nucleus was harder than the crust.

"During this operation which lasted twenty minutes, I fixed and attacked the calculus in three different positions. I then made a second injection through the exterior tube of the perforator, and the fluid in returning brought with it a considerable quantity of detritus or powdered stone, and some small fragments. On seeing this result Percy exclaimed, "*Gentlemen behold the proof positive!*" The sufferings of the patient were slight. Towards the end of the operation he complained of being a little unwell, but manifested more weariness than pain; and half an hour after it was terminated, stepped into his carriage and rode home. Next day he had a slight paroxysm of fever, which went off with a gentle perspiration; his tongue was a little furred; he had experienced no disorder in the urinary passages; and had rendered a quantity of stony powder with his urine. On the following days his condition presented nothing worthy of particular notice.

"Six days afterwards I resumed the operation, in presence of the same practitioners, and of Messrs. Magendie, Serres and Aumont; and had the satisfaction to obtain the same happy results, as at the

first operation; some voluminous fragments were detached, which I extracted with the pincers, which seized them with great facility.—This operation continued near thirty five minutes; the patient suffered very little, and discharged with his urine a quantity of *detritus* and some small fragments. The next day after the operation, and the following days, no particular symptoms supervened: hip baths, enemata, and emollient drinks, were continued for nearly a week.—A third operation was then instituted, which only continued twenty minutes. New fragments were detached; and by the aid of an injection a considerable quantity of powdered calculus was brought away. The sufferings of the patient were still less in this trial, than the last; because it was shorter; and in a quarter of an hour he was able to enter his carriage. There only remained in the bladder a single fragment too large to be expelled with the urine, it was broken with the pincers, and discharged a few days afterwards. One of its pieces was very irregular, weighed ten grains, was six lines and a half long, and eleven lines and a half in circumference. From the moment it was discharged, the patient experienced great relief, and his strength returned daily. I have since sounded him many times, and am convinced that the cure is perfect. The treatment did not continue a month; the patient was at no time confined to bed; and there were only three paroxysms of fever induced by the long operations which were practised, and by all my efforts to extract the fragments. Baron Larrey sounded him two years after the operation, and ascertained that he had nothing in the bladder." pp. 82—86.

Notwithstanding the length of this case, we are tempted to extract another, of a more recent date, which presents the value of the *Methode Civiale*, in a still more encouraging point of view:—

"Mr. Bourla of Brest, aged 19, had laboured under calculus for ten years. I ascertained that it was mammillary and of considerable size. Afterwards, I discovered that it was mural, but nevertheless friable. The first attempt with the lithontriter was made on the 27th of May, 1825. I experienced some difficulty in seizing the stone on account of its size; and should have felt that there was a difficulty in fixing it, if the inequalities of its surface, had not convinced me that it might be held as it was seized, so I proceeded to the operation.

"During a month, Mr. Bourla underwent nine operations, which did not present any circumstances worthy of particular notice: after each one, numerous fragments were discharged with the urine.

"He suffered so little during the whole time, that he walked to and from my house, to be operated on.

"Although extremely sensitive, he did not experience any of the accidents that might have been apprehended in such a temperament;

and acknowledged with a smile, that he had suffered more from fear han pain.

"I have this moment received a letter from him—written after returning from a long voyage—in which he assures me that his health is excellent.

"The treatment of this case was conducted in pressence of his Excellency the Swedish Ambassador, of Messrs. Arago, Thenard, Geoffroy St. Hiliare, Vauquelin, Vigaroux, and many other distinguished practitioners of the Capital." p. 123.

Now, if by the method of Civiale, a large stone of ten years duration, could be destroyed and removed in a month, without pain or fever, and the patient go abroad throughout the whole period, ought not that method to be introduced into every country? Why should it not make an essential part of the studies of every young man, who dedicates himself to surgery? It certainly ought.

We come to the second and third sections of this chapter, the subjects of which we have already announced. Cases referred to these heads, do not of course resemble each other so closely as the first; seeing that the circumstances which render the operation difficult, or impracticable, are necessarily much diversified.

Strictures of the urethra, and excessive sensibility of that tube; a similar state of the vital properties of the bladder; chronic cystitis; organic changes in the parieties; diseases of the prostate; the multiplication of calculi; and a bad state of the general health of the patient, are circumstances that render the operation of lithontrity difficult and dangerous. It should be regarded as impracticable or as contra-indicated;—when the disease has lasted for so long a time, that the calculus has acquired great dimensions, and the bladder, contracting firmly upon it, has become horny; when the calculi are numerous and of considerable size, and the health of the bladder, and that of the general system is bad; generally, when the stone is encysted; when it is large and lodged in the urethra; when that tube from *organic* changes has become, in a great degree, impervious; when the nucleus of the stone, is a foreign body of such a kind, that it cannot be disintegrated; finally, when the kidneys are in a state of organic disease. Many of these con-

ditions render lithotomy not less than lithontrity, hazardous, impossible, or fatal; Dr. C. has, however, reported some cases in which, after a reluctant trial of his method, he was induced to desist, and the patients were afterwards cured by the old operation.

Lithontrity would seem, at first view, to be much better adapted to females than males; but although the great diameter, shortness, and slight curvature of the urethra, are favorable circumstances; Dr. C. has found, that it is difficult to introduce the instrument into the *meatus urinarius;* when once introduced, however, the destruction of the calculus and its extraction are readily effected.

The ninth chapter of Dr. Civiale's book, is devoted to the objections that have been started to his method. He has replied to them in a resolute spirit; and sustained the practice, by the citation of a great number of cases. Our limits will only permit us to notice the practical objections, with his answers, and this in the briefest manner:—

"Any sudden change in an essential part of the art of cure, must necessarily combat ancient practices and habits; we should not be astonished, then, that lithontrity, which professes, in a great majority of cases, to render one of the most difficult and important operations of surgery unnecessary, should have met with opposition. The objections which have been made to my method are generally known, nevertheless, I shall enumerate them in this chapter, and show that most of the n are unfounded:—

"The possiblity of penetrating into the bladder with straight instruments has been denied. On this subject I need not add any thing to what I have already said in my 5th chapter." p. 167.

"The difficulty and danger of dilating the urethra, so far as to admit my instruments, is another objection; but those who know the structure of that canal are aware how easy it is to introduce sounds, of from two to four lines in diameter. Now the greatest diameter of my instruments is but four lines; and those which I commonly employ are but three. they do not, therefore, cause any forcible dilatation of the canal. When there is a stricture, it is sufficient, by the ordinary means, to restore the urethra to its natural size; and the cure of that affection becomes, then, the preparatory treatment for lithontrity." p. 168.

"Fears have been expressed relative to the strength and solidity of my instruments; but experience has demonstrated, that these are unfounded. p. 170.

"A great deal has been said on the danger to the bladder, from the pincers which I employ; it is only necessary, however, to glance the eye upon the plates which represent them, to be convinced that this danger is imaginary. The bladder cannot be pinched when it is full of water, and we operate with ordinary care." p. 171.

"Some surgeons have thought that the practice of lithontrity presented very great difficulties. Without doubt, there is some difficulty in seizing the stone, but the operator soon acquires the necessary experience.

"The pain attendant on the operation has been made another objection, and the reports concerning this have been greatly exaggerated. Experience has proved, that they are generally slight; and if in some cases they are severe, they are in none equal to what the patient has often experienced in the course of the disease. In a great number of instances no fever is excited, and the patient can walk about immediately after the operation." p. 171.

We may here state in support of the assertion of our author, that when Dr. Brown was lately in Paris, he was present at an operation on a man nearly 60 years of age, who, immediately after it was done, walked a mile with Dr. Brown, and conversed cheerfully the whole way.

"My method, it has been said, is only applicable to a certain number of cases. Now the cases recorded in this work can leave no doubt that the greatest, I might say the only obstacles, to the operation, has been the large volume of the stone, and the organic changes in the bladder, resulting from the long continuance of the disease. But this great duration has been occasioned by the fear of the knife, which induces patients to postpone a resort to lithotomy. My method presents none of these terrors, and the patients may, therefore, submit to it in the early stages of the disease, when it must generally be successful." p. 175.

"The possibility of relieving the bladder from every fragment of the stone, by lithrontity, has been strongly contested. But, for the three years that I have practised it, I have kept up an intercourse with all my patients, and the disease has not been re-produced in any of them." p. 178.

In addition, Dr. Civiale has reported several cases, in which death took place from different causes, sometime after the persons had been subjected to lithontrity, and by autopsic examinations it was ascertained, that the bladder was entirely free from foreign bodies.

"A state of nervous irritation must, as has been urged, be unfavorable to the employment of my method; but if the stone be small, and appropriate modes of calming the irritation of the system be pursued, the operation will be found practicable." p. 187.

"Some surgeons have thought, but incorrectly, that engorgements of the prostate gland might prevent the employment of lithontrity. The difficulty which they oppose to the introduction of straight instruments, may, in general, be surmounted by means of the precautions which I have already laid down; and they are not, perhaps, in any case sufficient to make us renounce the operation." p. 195.

"The state of the urinary organs before the time of puberty, must, say the objectors, oppose an obstacle to the lithontritic method, in children. But, in a great number of cases, I have operated successfully with an instrument only two lines in diameter; and such may be used with children after the third year." p. 230.

"The introduction of a straight sound, in children, is not so difficult as we might think, from the anatomical disposition of the parts. The great curvature of the urethra is easily overcome, and the prostate gland presents no difficulties." p. 206.

Finally, the objection to Dr. Civiale's method, on which the greatest stress has been laid, and which has been most frequently repeated, is, that it cannot be practised, when there is a stricture of the urethra. This, however, is no objection to it when strictures do *not* exist; and they are absent in a majority of cases. We have already quoted our author's remarks on this subject. The removal of the stricture, is the step which prepares the patient for the operation. To this point he has paid particular attention. He has invented and delineated a set of instruments for the purpose; and his tenth and last chapter, details his methods of cure. As we intend, however, in an early number, to make strictures of the urethra the subject of a separate article, we shall not, at present, disclose the views and practice of Dr. Civiale.

The appendix to the book contains a tabular view of the cases of calculus, treated by on the plan of Dr. Civiale, which we shall present to our readers entire, as affording connected data for an estimate of its value.

# ANALYTICAL TABLE.

*Of operations performed by Dr. Civiale, for breaking down the stone in the bladder. Presented in the order in which they were executed.*

| Nos. | Dates. | names and ages of the patients. | Duration of the disease, | Duration of the treatment | OBSERVATIONS. |
|---|---|---|---|---|---|
| 1 | 1823 | Boulbar, 64 years, | 2 months, | 18 days. | The disease was complicated with a suppression of urine, occasioned by a stricture of the urethra, the treatment of which served to prepare the patient for the operation. |
| 2 | —— | N——, 40 years. | 3 months, | 8 days. | The stone small and iable. It was broken and extracted in one operation, which continued five minutes. I did not submit the patient to any prepartion. |
| 3 | 1824 | Gentil, 30 years, | 3 years, | 1 month, | The stone mural (mulberry) and of the size of a large walnut. Its great hardness rendered the operation tedious; but it was perfect. |
| 4 | —— | Laurent, 40 years, | 6 months, | 1 month, | The stone friable, and of the size of an ordinary walnut. It had for its nucleus a French bean, which was extracted with the fragments of the stone. The irritability of the bladder rendered the operation difficult. |
| 5 | —— | Perot, 30 years, | 18 months, | 1 month, | Two hard calculi, of the size of a large almond. The small diameter of the urethra, and the irritability of the bladder, were opposed to the operation. Some imprudences of the patient caused a swelling of the testes, and retarded the cure. |
| 6 | —— | Lebaigue, 66 years, | 4 years, | 1 mo. & a half | Two very hard calculi of the size of a small hens egg; nevertheless a favourable conformation of the parts, rendered the operation easy. Six months after the cure, Labaigue fell a victim to an affection of the right kidney. An autopsic examination established this fact, and also, proved, that the bladder was sound, and did not contain a single fragment of calculus. |

| | | | | | |
|---|---|---|---|---|---|
| 7 | — | Boutin, 36 years, | 3 years, | 1 mo. & a half | Stone very hard, flattened, oblong, and of the size of a walnut. Its form augmented the difficulty of the operation. Many paroxysms of fever, and other causes foreign to the operation, prolonged the duration of the treatment. |
| 8 | — | Cortial, 56 years, | 3 years, | 3 months, | Stone friable and very voluminous. Engorgement of the prostate, considerable. The bladder in a decidedly unhealthy state. Operation extremely difficult. Many of the first trials were unsuccessful. Symptoms of gravel afterwards manifested themselves slowly. At a subsequent time two small stones were extracted. |
| 9 | — | Maud'huyt,40 years, | 4 years, | 15 days, | Two calculi of the size and form of an almond; one mural and very hard—the other more friable. The patients disease had been misunderstood for many years, and his health had suffered from it. |
| 10 | — | Cornu,72 years, | 5years, | 3 months, | Two voluminous and very hard calculi. The bladder unhealthy; the constitution very feeble. Before the treatment was finished, Mr. Cornu, from an irregularity of living, experienced an attack of acute gastritis, from which he died. Examination after death disclosed what we have just stated; and, besides, that there still remained in the bladder a fragment of stone an inch and a half long in its greatest diameter. The organ itself was in the state in which we generally find it, in cases of long standing. |
| 11 | — | Perin LePage,45ys. | 15 months, | 18 days, | Calculus friable, and of the size of a small walnut. The operation easy. |
| 12 | — | Mrs.DeLange,72 ys. | 18 months, | 12 days, | The calculus small and friable. The operation did not present any difficulty. The extreme weakness of the patient did not constitute an obstacle to her cure. |
| 13 | — | Thubeuf, 66 years, | 3 years, | 3 months, | Sixteen calculi of which fifteen had the size of a hazlenut; while the other was much larger. The prostate much engorged: the bladder very irritable. The operation extremely difficult. A nephritic colic, to which the patient was liable, required us to suspend the treatment for a month and a half. |

| | | | | | |
|---|---|---|---|---|---|
| 14 | —— | Remond, 65 years, | 2 years, | 1 mo. & a half | The stone hard, and of the size of a small hen's egg. The great irritability of this patient, and his predisposition to apoplexy, required me to proceed with caution; and diminished the chances of success. |
| 15 | 1825 | Azille, 65 years, | 18 months, | 21 day , | Stone hard; of the size of a walnut. Up to the day of the operation Mr. Dupuytren had not been able to find this stone with the common catheter; by means of my instrument it was at once discovered. The operation did not present any difficulty. A fragment remained in the bladder which kept up the pains; it was extracted and the cure became complete. A year afterwards the patient died of a cancerous affection of the pylorus. |
| 16 | —— | Desrotours, 50 years, | 18 months, | 1 month, | Stone very hard, oblong, flattened, from 12 to 15 lines, in its longest diameter. Some difficulties caused by the form of the stone, presented themselves in the beginning of the treatment. The operation afterwards became easy. |
| 17 | —— | Erard, 73 years, | 4 years, | 2 mo. & a half | Many very hard calculi. A bad state of the patient's health, with a marked predisposition to congestion of the lungs, rendered the success of the operation doubtful, and prolonged the treatment. |
| 18 | —— | Desprets, 45 years, | 4 years, | 1 month, | Two hard calculi, of the size of an almond. The operation easy. |
| 19 | —— | Balet, 68 years, | 2 years, | 1 mo. & a half | Many friable calculi. A severe affection of the chest and a bad state of the bladder, detracted much from the prospect of success; nevertheless the patient was cured of the stone. A year afterwards, he sunk under a pulmonary affection. Before his death he had commenced discharging gravel. |
| 20 | —— | Bourla, 19 years, | 10 years, | 1 mo. & a half | The stone mural, (mulberry) of the size of a large hen's egg. Repeated operations, but easily performed. |
| 21 | | Brousseaud, 45 years | 1 year, | 1 month, | Many small and hard calculi. An engorgement of the prostate gland rendered the operation difficult. |
| 22 | —— | Huet, 56 years, | 3 years, | 1 month, | The stone large, but friable. A catarrh of the bladder, an asthmatic affection, and an aneurism of the heart, rendered the operation very hazardous: nevertheless it succeeded. A month afterwards, the aneu- |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | rism caused the death of the patient. A *post mortem* examination established this fact, showed that the bladder was sound, and that the stone was entirely removed. |
| 23 | —— | Leclere, 55 years, | 3 years, | 1 month, | Many small calculi. The patient very irritable and extremely weak, which prolonged the treatment. |
| 24 | —— | Fournier, 60 years, | 18 months, | 22 days, | Many very hard calculi. The operation easy; but an old malady of the chest became much worse. About two months afterwards the patient died of a neglected suppression of urine. |
| 25 | —— | Guilbert, 35 years, | 3 years, | 25 days, | The stone friable, and of the size of an ordinary walnut. Irritability excessive. Operation easy. |
| 26 | —— | Matre, 40 years, | 4 years, | 1 mo. & a half | The stone large and hard; the bladder unhealthy; the prostate engorged; the operation difficult. |
| 27 | —— | Dauza, 66 years, | 2 years, | 3 months, | Stone voluminous and friable. Paralysis of the bladder, incontinence of urine, œdema of the lower extremities, asthma, continued fever. These severe complications in a great degree, disappeared after the operation. |
| 28 | —— | Travers, 75 years, | 3 years, | 1 month, | Stone of the size of a walnut. An engorgement of the prostate, irritability of the bladder, and the great age of the patient, were not obstacles to the success of the operation. |
| 29 | —— | Lucotte, 56 years, | 2 years, | several mo. | Many calculi. The prostate very large. Irritability of the bladder carried to the highest degree. Different circumstances, foreign to the operation, compelled me to suspend it, which prolonged the treatment for several months. The operation presented great difficulties. |
| 30 | —— | Belin, 36 years, | 15 months, | 15 days, | The stone friable; it had for a nucleus a beard of grain and a piece of straw, which were extricated with the stone. The operation easy. |
| 31 | 1826 | Fichon, 40 years, | 1 year, | 8 days, | Stone small. Was broken in seven minutes. Some fragments were extracted with the pincers, the remainder came away with the urine. |

| | | | | | |
|---|---|---|---|---|---|
| 32 | —— | Champanhac, 60 ys. | 3 years, | 1 mo,& a half | Stone hard; of the size of a walnut. Bladder unhealthy; prostate engorged. Operation difficult. |
| | —— | Viallanes, 58 years, | 1 year, | 20 days, | Many small friable calculi. Operation easy. Three months after the operation, the patient fell a victim to a malady which had no connexion with it. This fact was established by an autopsic examination; which also assured us, that the bladder was sound, and did not contain any fragments of stone. |
| 34 | —— | N——, 32 years, | 2 months, | 12 days, | Two calculi; one was fastened in the urethra and extracted, the other broken in the bladder. The operation very easy. |
| 35 | —— | Galle, 13 years, | 6 years, | 2 months, | Two calculi of the size of a walnut, and very hard. The necessity of employing an instrument of the smallest diameter, rendered the operation difficult, and prolonged the duration of the treatment. |
| 36 | —— | Mourot, 66 years, | 14 years, | 2 months, | A great number of very hard calculi, some of them as large as a walnut. A favourable conformation of the parts, facilitated the operation by enabling me to employ an instrument of four lines—the largest that I have used. |
| 37 | —— | Seve, 40 years, | 18 months, | 1 mo.& a half | A stone of the middle size. The great irritability of the patient, compelled me to operate but seldom, which prolonged the treatment. |
| 38 | —— | Martin, 43 years, | 5 months, | 25 days, | Stone hard; from 12 to 15 lines in its diameter; the operation easy. |
| 39 | —— | Anthoine, 45 years, | 6 years, | 1 month, | The stone friable; of the largest size that I have ever broken; nevertheless the operation was easier than might have been expected. For 18 months the patient had labored under an incontinence of urine; it ceased after the operation. |
| 40 | —— | Oudet, 60 years, | 18 months, | 21 days, | Stone of a middle size. Operation easy. |
| 41 | —— | Courtois, 60 years, | 3 years, | 18 days, | Stone voluminous. No difficulty in the operation. |
| 42 | —— | Michel, 41 years, | 14 months, | 1 month, | Many small calculi; the bladder very irritable, with great organic disease. The operation easy, |
| 43 | —— | Bousquet, 63 years, | 15 months, | 1 month, | A small blackish calculus, porous and brittle. Ordinary sounding had furnished but very uncertain *data*. On the first exploration with my instrument, the stone was immediately found, seized and divided. The operation did not offer any difficulty. |

"All the patients on whom I have operated, with one exception, were cured. Those who died sometime after the operation, fell victims to causes entirely foreign from it. In the majority of these cases, it was ascertained by dissection, that the bladder was sound, and did no tcontain any fragments of stone."

With these extracts we close our analysis. If our readers have thought it tedious, they must remember the novelty, magnitude and importance of the subject. A subject of deep interest to the profession, and, as yet, but little understood, or regarded in America. Our object is to make it known, at least in outline. and to invite our surgical brethren to investigate it. To do this, we have thought it necessary to lay before them, as many facts as our limits would permit, and confidently hope, that we have not laboured in vain. For ourselves, we see no reason for doubting what Dr. Civiale has published. His experiments have not been made in secret; but, as the history of his cases informs us, under the scrutinizing observation of the most distinguished surgeons of the French metropolis, than whom, the world could not furnish more competent judges.

That the operation of *lithontrity* cannot be successfully performed without laborious preparation, is quite probable; but this constitutes no objection to it, when we recollect, that the operation of *lithotomy*, requires a long course of study and experience to render *it* successful.

In point of danger, the two operations seem to us scarcely to admit of a comparison—although one is yet in its infancy, and the other has for ages been advancing to its present condition. As to the pain which they inflict, the contrast, if we credit either theory or experience, is equally striking. Finally, in the terror with which they agitate the unfortunate persons who are compelled to resort to one or the other, the difference must be equally in favour of the *methode Civiale.*— We trust, therefore, that the time is not distant, when a competent number of our professional brethren, will be found seriously engaged, in dispensing, to their afflicted countrymen, the benefits which it seems so well qualified to confer.

We shall conclude by adopting the eloquent language of

Messrs. Chaussier and Percy, who, in their report to the royal Academy of Medicine, on the invention of Dr. Civale, pronounce it "EQUALLY HONOURABLE TO ITS AUTHOR, GLORIOUS TO FRENCH SURGERY AND CONSOLING TO HUMANITY."

# MISCELLANEOUS INTELLIGENCE.

## I.—Analectic.

1. *On the Valves of the Pulmonary Veins*, by Professor Mayer. "In all systematic works on anatomy, we find it asserted that the pulmonary veins have no valves. It is unnecessary to prove this by multiplied citations—Waller among the ancients, and Meckel as the most modern writer, will suffice. The former says, in his Elementa Physiologiæ, t. i. p. 145, "Sed etiam vera pulmonalis absque valvulis est;"—and Meckel, in his Human Anatomy, vol. iii. p. 368, remarks that the pulmonary veins are usually without valves, with some very rare exceptions.

Professor Mayer's attention was first called to the valves in these vessels by finding them very numerous and very large in the pulmonary veins of the cow, although on looking for them in swine, he found them absent.

In man, however, he found them, on examination, both large and numerous; so that it is difficult to understand how they should have escaped observation. A valve is always met with at the place where a venous branch joins the larger trunks at an acute angle; and the more acute this is, so much more marked is the valve. But where the branches join at a right angle no valve exists; which is precisely what takes place in the other parts of the venous system, as in the extremities, where valves exist where a branch joins the larger trunks at an acute, but not where this happens at a right angle. From this we see why it happens that fewer valves are met with in the pulmonary than in other veins; because the ramifications of the pulmonary veins chiefly take place at a right angle. This form of distribution occurs particularly in swine—and hence in their pulmonary veins there are no valves.—*Zeitschrift der Physiologie, Tom. III. p.* 155.

2. *Microscopic Researches upon the intimate structure of Animal Tissues.* By M. Raspail.—This memoir of a skilful and conscientious microscopic observer, is entirely opposed to the facts lately advanced by Messrs. Prevost, Dumas, Milne Edwards, &c. The following presents a rapid analysis.

1st. The membranes isolated and reduced to their essential consistence, are not composed of globules perceptible by our means of observation, and however coarse those examined may be, their surface will appear smooth and not granulated. If a filament be taken

from a membrane, serving as a sheath to the muscular fasciculi, and placed in water, examination with the strongest microscope will only show a smooth surface, as transparent as the water itself. Some granulations of an irregular size and form, may be observed upon this surface, but these are evidently nothing more than little fatty follicles which do not properly belong to the membrane.

2d. *The Blood.*—The form and size of the globules differ in different men, as well as in various animals, and according to the vessels in which they have been found. They are smallest in the capillaries. The globules are vesicles filled with a substance probably albuminous. Those of the blood in nowise differ from those found in all the animal tissues.

3d. *Epidermis.*—The epidermis offers to the microscope the appearance of a bed of cells of greater or less thickness, flattish and in their outline irregular. Here and there, in their interior, granulations of various forms and sizes are perceptible, separated by spaces in which not the smallest globule is to be seen. The epidermis is nothing more than the external bed of the dermoid cells hardened by the air. The hairs are developed in the same manner as those of vegetables, from which they only differ by containing a fatty substance in their internal cells. The pits designated by Eichborn as the origin of the perspiratory canals, are to be seen, but the opening of these canals is not perceptible.

4th. *Nervous Tissue.*—If a filament from a nervous trunk, be examined by the microscope, the trunk is seen to consist only of an agglutination of cylinders, the fiftieth part of a millimetre in diameter. Fontana has proved that these cylinders are composed of a smooth and transparent membrane containing within "a glutinous, elastic and transparent matter, that does not dissolve in the water in which the cylinders float." Having pressed out this matter between two glasses, he caused it to return again by diminishing the pressure. M. Raspail considers each of these cylinders as a cellule which has grown only in length. It encloses a true cellular tissue, imbued with a homogeneous and fatty substance. It is without any longitudinal cavity. In its growth, it extends itself from the encephalon to the extreme ramifications.

5th. *The Muscular Tissue.*—The last analysis of this tissue, shows it to be composed of cylinders wound together spirally, and closely glued together. In the ox, the size of these cylinders is one twentieth of a millimeter. They are full like those of the nerves, from which, however, they differ by their rose colour. Their smooth sides exhibit cells on their interior, varying in form and size. Each fasciculus of cylinders is enveloped by a smooth sheath. Several of these bundles thus united together are again enclosed in a common sheath, and so on in succession.—*Journal des Progres, Vol. IX. from the Repertoire d'Anatomie, &c.*

3. *Case of Disease of the Brain illustrating the Functions of the Fifth Pair of Nerves.* By E. Stanley, Esq.—A lady, aged forty, was attacked, immediately after her confinement, with fever and inflammation of the brain; after which, she suffered severe and almost constant pain in the head. Again becoming pregnant, she was confined about three months before her death. When nearly recovered from this confinement, she was attacked with pain in the head, more acute than usual, and delirium. These symptoms subsiding, hemiplegia supervened, and continued through the remaining two months of her life. During this period, the following circumstances were particularly noticed:—

The hemiplegia was on the left side. In the face, sensation and motion were completely lost. In the arm and in the leg sensation remained.

There were frequent attacks of erysipelas in the face, but confined to that side which was deprived of sensation and motion.

In the left ear hearing was completely lost.

In the left side of the tongue sensation was lost, but motion remained.

Whilst in the right nostril, the mucous membrane was pale, in the left nostril it was constantly of a deep red colour, and there were several discharges of blood from it.

In the left eye the vessels, first of the conjunctiva, then of the deeper membranes, became inordinately distended with blood. Opacity and ulceration of the cornea soon followed, with the escape of the aqueous humour, and complete disorganization of the globe.

Upon the subsidence of the delirium which preceded the hemiplegia, the intellect became clear, and remained so to the moment of death.

The medical superintendence of the preceding case was confided to Dr. P. M. Latham and to Mr. Eyles. I visited the patient in the latter part of her illness, and the opportunity was given me of examining the brain, which presented the following appearances:—

Effusion of transparent fluid into the cellular tissue of the pia mater, and into the ventricles, to the extent of about four ounces.

Enlargement of the tuber annulare, especially on its left side, and in a direction to compress the fifth and seventh nerves against the basis of the skull. A section of the tuber annulare discovered within it a tumour about the size of a walnut, occupying the whole of its left side, and extending into the left crus cerebelli. The consistence of the tumour was firm, its colour brown, and specks of blood were dispersed through it. From this morbid structure the fifth and seventh nerves were detached. When examined close to their respective foramina in the basis of the skull, these nerves presented no unusual appearance in size or texture.

The history of the foregoing case may be interesting to physiologists, as it records an instance of disease in that part of the brain whence the fifth and seventh nerves are detached, producing in the parts supplied by those nerves certain effects agreeing with the ex-

periments of Magendie and others. Here, however, was an experiment of Nature's own making, free from the objections which may attach to experiments upon living animals.

In the case now related, the morbid changes in the eye, consequent on the disease, at the origin of the fifth nerve, were precisely the same as are reported to follow the division of this nerve in a living animal. The abolition of the functions of the fifth nerve in the human subject by disease, and in the brute by its division, was alike followed by inflammation, destructive of the eye; and in the case before us, the excitement of the blood-vessels in the parts deprived of sensation and of motion, was further manifested in the erysipelas of the paralysed cheek, and in the inordinate repletion and rupture of the blood-vessels in the nostril of the same side."—*London Medical Gazette, Vol. I. No.* 18, 1228.

4. *Case in which there was a diminution of Sensibility on one side, without loss of the power of Motion; and a loss of Muscular Power on the other side, without any diminution of Sensibility.* By H. Ley, M. D.—The following case is extremely interesting, as illustrating in a striking manner the distinct functions of different nerves, as recently pointed out by Mr. Charles Bell, and some of the continental physiologists.

Mrs. W. was delivered by a midwife at Kilburn. Her labour was easy, but followed by profuse hæmorrage upon the separation of the placenta, and after its exclusion from the uterus.

She revived from the state of exhaustion immediately consequent upon the loss of blood, but at the end of about three or four days became feverish, and complained of severe head-ache; for a week, however, she had no other assistance than that of the midwife.

At the end of this time, (about ten days after her delivery,) the head-ache continuing, and being now accompanied with some degree of 'numbness on one side,' I was requested to see her.

I found her labouring under severe head-ache, not confined to, but infinitely more violent upon one side than the other, and occupying the region of the temporal and occipital bones above the mastoid process, and attended with considerable pulsation.

Upon one side of the body there was such defective sensibility, without, however, corresponding diminution of power in the muscles of volition, that she could hold her child in the arm of that side, so long as her attention was directed to it; but if surrounding objects withdrew her from the notice of the state of the arm, the flexors gradually relaxed, and the child was in hazard of falling.

The breast, too, upon that side, partook of the insensibility, although the secretion of milk was as copious as in the other. She could see the child sucking and swallowing, but she had no consciousness from feeling that the child was so occupied; turgescence of that breast produced no suffering, and she was unconscious of whati

termed the *draught* on this side, altough that sensation was strongly marked in the other breast.

Upon the opposite side of the body there was defective power of motion, without, however, any diminution of sensibility. The arm was incapable of supporting the child; the hand was powerless in its gripe; and the leg was moved with difficulty, and with the ordinary rotatory movement of a paralytic patient; but the power of sensation was so far from being impaired that she constantly complained of an uncomfortable sense of heat, a painful tingling, and more than the usual degree of uneasiness from pressure, or other modes of slight mechanical violence.

Medicinal agents, including blood-letting, general and local, blisters, purgatives, &c. directed, first by myself, afterwards by Dr. P. M. Latham, to whose care I directed her in the Middlesex Hospital, were of little avail, and she at length left the hospital scarcely, if at all, benefitted.

At the end of a few months she again proved pregnant. Her delivery, at the full time, was easy and unaccompanied with hæmorrhage, or other formidable occurrence, but at the expiration of about ten days she complained of numbness on both sides. Her articulation was indistinct; she became more and more insensible, and sunk completely comatose.

Upon examination of the body no positive disorganization of brain could be detected. The ventricles, however, contained more than usual serum; and there were found, more especially opposite to the original seat of pain, thickening, and increased vascularity of the membranes, with moderately firm adhesion in some parts; in others an apparently gelatinous, transparent, and colourless deposit interposed between them."—*Ibid, Vol. I. No.* 25, 1828.

5. *On the Effects of the Division, or Organic Lesion of the Fifth Pair of Nerves.*—It appears from the experiments of M. Magendie, H. Mayo, and C. Bell, on the action of the cerebral nerves, that on the division of the fifth pair, or when it is in a diseased state, the eye undergoes some peculiar morbid alterations. M. Magendie informs us, (Journ. de Physiol. IV,) that after the division of this nerve, the cornea becomes opaque, and that it, as well as the iris, begins to inflame and suppurate; an effusion of lymph takes place in the interior of the eye, and gradually the whole globe passes into ulceration. All these experiments, however, did not satisfy M. Magendie, and could not, in fact, lead to a clear result, as on dividing the nerve, the internal carotid was invariably wounded; he therefore, in more recent experiments, divided the nerve before it passes over the pars petrosa, and then obtained an effect somewhat different from that described before; the eye was much less altered, the inflammation occupied its upper portion only, and but a very small segment of the upper circumference of the cornea became opaque. It appears, then, that the fifth pair of nerves exercises a direct influence on the

nutrition of the eye; the different results of the experiments are easily accounted for by the circumstance, that in the former experiments of M. Magendie, the ophthalmic artery was separated from the internal carotid, and that thus the nutrition of the eye necessarily became affected.

The following pathological fact, reported by M. Serres, confirms the experiments of M. Magendie. A young man was admitted in the Hospital de la Pitie, on account of epileptic attacks; at the same time a slight inflammation of the right eye was observed, the cornea was opaque, and the sight was to a considerable degree affected. All these symptoms gradually increased, till the sight was completely lost, and the right eye and eyelid, as well as the right side of the nose and tongue, were quite insensible. The patient died eleven months after admission, in a violent epileptic fit. On examination, the ganglion of the fifth pair was found enlarged, of a yellow colour, and very vascular; and on its exit from the pons varolii, the nerve was covered with a gelatinous mass.

Professor Mayer, of Bonn, (Journ. der Chirug. and Augenheilk. T. x.) has recently performed many experiments, from which it appears that not only the division of the fifth pair is followed by morbid changes of the eye, but that the same effects take place after wounds of the neck. From eighteen experiments on dogs, horses, and pigeons, he comes to the following result:—1. The division of the cervical portion of the sympathetic nerve was sometimes made without any effect on the nutrition of the eye; in other cases it was followed by redness and inflammation of the conjunctiva. 2. The same morbid change, in most cases, followed the division of the pneumogastric nerve. 3. The sympathetic and pneumogastric nerves having been divided, a very intense inflammation of the eye took place, which extended to its internal parts. 4. If the carotid was tied, and at the same time the nerves in its neighbourhood were carefully avoided, the nutrition of the eye was in no manner influenced. 5. After a ligature of both carotids, the eyes suffered more or less; they became dim and opaque, but very seldom a complete disorganization ensued. 6. But if the ligature comprised the pneumogastric or sympathetic nerve, an effusion took place from the enterior surface of the iris, the pupil was closed by a false membrane, and the cornea passed into suppuration.

6. *Vision after Destruction of the Optic Nerves.*—Magendie gives an instance of sight existing after the destruction of the optic nerves, in a man by name of Bardon, who was admitted into the Hotel Dieu, in 1827, and there died. On dissection, the following appearances presented themselves. In the interval between the crossing of the optic nerves and the pons varolii, was a cyst of the size of a small egg, this cyst was filled with a yellowish matter, of which one-third was solid, on the sides, and above, the cyst had flattened and almost destroyed the optic nerves, all that remained of them

were portions of cerebral substance adhering to the cyst, and which were wholly deficient at the commissure; in fact, there was no connection between the eye and brain, except by the cyst. This patient could distinguish objects a few days before his death.—*Bull. Sci. Med. April*, 1828.

7. *On the effects of Galvanism on the Nerves.*—Of the numerous experiments which have been instituted, to verify the analogy between galvanism and the nervous action, those of Weinhold are not the least interesting or least curious. The following are the most remarkable.

He beheaded a cat, and after pulsation and muscular action had completely ceased, he removed the spinal marrow, and filled the vertebral canal with an amalgam of mercury, zinc and silver. Immediately the throbbing of the arteries recommenced, and the muscular actions were renewed, which it was impossible to distinguish from those which are produced by the influence of the spinal marrow; the animal made many leaps. When the irritability appeared exhausted Weinhold, by means of a metallic arc, placed the heart and voluntary muscles gradually in contact with the artificial medullary substance, and he revived again general but feeble contractions.

He filled with the same amalgam, the cranium and vertebral canal of another cat, which did not give any sign of life; the animal became during about twenty minutes in such a state of vital tension, that it raised its head, opened its eyes, looked steadily, attempted to walk, and endeavoured to rise after falling down frequently. During all this time the circulation and pulsation were very active, and continued for a quarter of an hour after the chest and abdomen were opened. The secretion of the gastric juice was evidently more abundant than ordinary, and the animal heat was perfectly re-established.

Weinhold filled also the cranium only, of a dog with the same amalgam, he examined then the principal functions of the senses, and observed that the pupil still contracted, that the animal manifested still a desire to avoid the light, when a lighted candle was placed near it, and that it listened when a person struck with a key upon a table.

Weinhold remarked also that the two extremities, of a divided nerve, gave sparks when they were brought together. He divided the crural nerve in a cat, and placed the extremities at the distance of a line apart, and connected them by a metallic arc: the moment when he completed the chain, he saw at each extremity of the nerve a luminous point, but they did not pass from one to the other.

The hypothesis of nervous atmosphere has been completely subverted by the experiments of Weinhold, in which, after having cut the crural nerve, he could not excite the contraction of the thigh by means of galvanism, although the extremities of the nerves were at the distance of a line or even of a quarter of a line. The ligature

even of nerves, prevents the propagation of galvanism. He observed further that the nervous pulp is the only conductor of the galvanic action, whilst the neurilema is entirely deprived of this power.

Weinhold has observed even material changes which happen in the nervous system during the action of galvanism. Having isolated the crural nerve of a frog, he observed that the medulla of the nerve, which was almost transparent, retracted during the contraction of the muscles, produced by galvanic irritation, and that this retraction alternated with the dilatation. He laid bare the tracheal nerve of a rabbit, and he observed that after having produced twenty or thirty rapid contractions of the members, by means of a galvanic pile, the size of the nerve was diminished, lost its cylindrical form, and ultimately was reduced to a simple white and compresed tube. This loss of substance of the nervous medulla, during the action of nerves, was in the space of twenty or twenty-five minutes, repaired by the increase in the beating of the heart, coinciding with the violent contractions of the muscles; so that the nerve after a certain time, was restored to its cylindrical form. When on the other hand the heart is extirpated so that the reparation of the loss of nervous substance, cannot be effected by means of the circulation, the atrophied nerve does not regain its primitive form. Weinhold has observed the same loss of substance in the portion of the spinal marrow, where the nerves of the anterior extremities go off, when he made the muscles of these members contract by means of violent and continued action of the galvinic pile, directed to its nerves.—During the action of the nerve, not only the mass of the nervous substance diminishes, but also its consistence. When he divided a nerve, and irritated it a long time by means of galvanism, he observed that the nervous matter gradually became softer, and finally flowed guttatim, from the extremity of the divided trunk."—*Jour. des Progres, Vol X.* 1828.

These are certainly marvellous experiments, and if their correctness should be confirmed by further observations, we need no longer despair of the Promethean art being attainable.

---

## II. Original.

### First Annual Report of the Visitors of the Cincinnati

### EYE INFIRMARY.

The Visitors of the Cincinnati Eye Infirmary, in obedience to the act establishing the Institution, have the honour to submit to the General Assembly the following *Report:*

The Infirmary projected by Dr. Daniel Drake, in concert with a number of citizens of Cincinnati, began its operations

on the first of July, 1827, and was incorporated by the Legislature at the succeeding session.

During the eighteen months that have elapsed, there has been no period when it has not had indigent citizens of Ohio, as patients; some of whom have been cured, others relieved, and others discharged as incurable, from the state in which the intrinsic violence, or the wrong and inefficient treatment of the early stages of their complaints, had left them.

These patients have all been the beneficiaries of the Infirmary. Some of them have been boarded and lodged in places selected by the surgeon; others have received partial assistance of the same kind; and others, only the requisite medicines, according to the degree of their indigence; but all have experienced the gratuitous personal services of the surgeon, according to the original plan and design of the institution.

The funds for these laudable purposes, have been exclusively derived from the voluntary contributions of certain citizens of Cincinnati and its vicinity, who have thus charitably lent their aid, to many unfortunate and needy persons; not only of the city, but also from various parts of the state. To make permanent and adequate provision, for this numerous class of patients, is obviously beyond the means of one portion of the community, and the Visitors, therefore, would respectfully represent to your honourable body, that in their opinion, few subjects of deeper interest, to the people of the state at large, *could* engage the attention of their Representatives, or make a more powerful appeal to the public charity, than the infant Infirmary committed to their charge.

The number of poor persons who labour under diseases of the eye, (in all respects one of the most important organs of body) is far greater than is generally supposed, and more have already required assistance at the Infirmary, than with the slender charity fund, placed at the disposal of the Visitors, could be received.

Many, indeed most of the maladies of the eye, as the Visitors have been advised, are tedious in their cure, and require a long attendance at the Infirmary. An ample fund, therefore, is necessary to the fulfillment of the benevolent design of the founders of the institution, and of the General Assembly, by

whom it was incorporated; and the Visitors venture to express the hope, that your honourable body will not be slow in devising such sources of revenue, for the institution, as will enable it to dispense the extensive benefits which, with adequate means, it is so well calculated to confer.

But it is not in reference to paupers only, that the state might be called upon to endow an Infirmary for diseases of the eye. All classes of society are interested in its success; for, as the Visiters are informed and believe, the maladies of the eye and the operations which many of them require, are frequently of such a peculiar and complicated character, as to call for much special preparation, and a greater variety of means, than are possessed by the physicians of the state generally. All persons having such complaints are interested in the full establishment, within the state, of an Infirmary to which they may resort, instead of visiting the distant hospitals and occulists east of the mountains.

The Visitors consider it their duty to state, that for more than three months past, the benefits of the Infirmary have been but partially dispensed, in consequence of a severe burn which the surgeon received on both hands; and which at one time threatened to incapacitate him for many of the duties of his office. While in this situation, the Visitors at his suggestion, were induced to appoint Jedediah Cobb, M. D. a consulting surgeon, and have received his acceptance of the same. They are gratified, however, to be able to say, that no permanent decripitude of a serious kind, will follow the casualty to which they have referred; but still the union of another professional gentleman with the Infirmary, cannot fail to increase its claims on the confidence of the community.

All which is respectfully submitted.

J. L. Wilson, President,
Davis B. Lawler, Secretary.
Wm. M. Walker, Treasurer.
Peyton S. Symmes,
J. P. Foote,
Wm. Burke,
Lewis Howel,
John Locke.

*Cincinnati, Ohio, December 1st*, 1828.

## WESTERN MEDICAL CLASSES.

*Medical College of Ohio.* The pupils of this institution during the present session amount to 113.

*Transylvania University.* The number of pupils in the medical department of this institution, at the present time, is 203.

## NECROLOGY.

**DIED,** near Lexington, Ky. in the month of December last, George J. Ratrie, M. D. Dr. Ratrie fell a victim to pulmonary consumption, at the age of 30. He had received a regular medical education, but made it subservient to the practice of Dentistry; which he pursued with skill and assiduity, in many towns and cities of the west and south-west. In this important but neglected branch of the profession, he was really a useful man; and possessing sound principles, united with amiable manners, the people among whom, at various times he carried the benefits of his skill, could not have failed to regret his death.

—— In this city, in the month of February, Doctor Trueman Bishop, Physician and Minister in the Methodist Episcopal Church. Dr. Bishop was a man of gentle manners, exemplary piety, and impressive, unaffected, pulpit eloquence. He had not practised physic to much extent for several years; but at the time of his death, was vice president of the First District Medical Society of Ohio, and a member of its Board of Censors.

—— At Newport, Ky. in September last, Dr. Thomas Hinde, at the advanced age of 92 years.

—— At New Haven, Connecticut, within the present month, Nathan Smith, M. D. one of the professors in the Medical Department of Yale College.

Our next number will contain biographical sketches of both the last named gentlemen.